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A Study on Standard Classification of Disaster•Life Safety Accident Criteria

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Abstract

Purpose: Purpose: The National Safety Experience Center Establishment and Reinforcement Project Management Guidelines, established to build a national safety experience center that is central to practicing education on disasters and safety accidents, requires that appropriate experience training programs be in place. However, due to the lack of classification grounds for the six areas of disaster•safety accidents presented by the Ministry of Public Administration and Security, and the mortality statistics necessary for establishing sectors have accumulated for over a decade, they are based on this. Our purpose is to standardize classification of sectors belonging to each area. **Methods:** We will divide disaster•safety accidents into 6 areas by three steps, and the grounds for 6 areas of accidents are presented. The 15 external causes other than the disease since 2009 has been proposed by The National Statistical Office. Therefore on the basis of these causes, various sectors belonging to each area are classified. **Results:** We will divide all disaster•safety accidents into six areas through three logical separation stages, and the areas were systematically classified based on the 15 factors of death. In conclusion, we present the grounds for the classification criteria in the six areas, the transportation accident disaster area in three areas, the social infrastructure system area in four areas, the crime accident disaster area in four areas, the life safety accident area in four areas, we set up all disaster•safety accidents in six areas and finally standardize total 25 areas.

Keywords: Disaster•safety accidents, Safety Experience Center, experience effects, area and sector

1. INTRODUCTION

1.1 Background of Research

As awareness of disasters and safety accidents has increased rapidly, the need for safety education for all citizens is critical to prepare for accidents based on the recognition of risks. Korea has built a national safety experience education center that has been central to practicing this perception

「Guidelines for the Construction and Reinforcement of the National Safety Experience Center」 established by the Ministry of Public Administration and Security defines the National Safety Experience

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Center as a safety experience education facility constructed in compliance with the safety experience center standard model such as facility scale and experience education program. It is required to provide subsidies for our purpose of supporting projects to reinforce.

According to this guideline, safety experience centers are classified into large, medium, and small size based on the facility size such as total area (or net area) and number of experience education programs. It is necessary to improve the learning effect of experiential learning contents by researching. Such a review is necessary only if the experiential learning contents required for large safety experience halls are examined for the distribution of disaster•safety accidents in each area.

However, there is a lack of grounds for categorizing disaster•safety accidents and setting up sectoral sectors. . It can lead to voluntary program improvement by the operating entity[1].

1.2 Purpose and method of research

After presenting the classification basis for deriving the six areas of disaster•safety accidents classified by the Ministry of Public Administration and Security, and setting the areas in each area using statistical grounds, the experience learning program of the current Korea Safety Experience Center Our purpose of this study is to present the problems of experiential education of large safety experience center by conducting a survey on the actual condition.

In order to achieve this goal, the accident field was established by inferring the accident area and area in which the foreign person occurs based on the mortality trend corresponding to 'foreign disease and mortality', which is compiled and published by the National Statistical Office.

Finally, we surveyed the current status of the composition of experience contents at large safety experience centers in Korea, and analyzed the learning effect of the experience room and program that covers the six major areas.

2. CLASSIFICATION OF DETAILED AREAS OF DISASTERS AND SAFETY ACCIDENTS

2.1 Classification of detailed areas of disasters and safety accidents

Disaster•safety accidents can be roughly classified into disasters and disaster accidents and life safety accidents according to the necessity of coping with the national level on the basis of the seriousness of the accident damages. Thoughts belong, they form an independent category.

Life safety accidents are accidents that occur in individual activities for Our purpose of recreational activities by individual citizens outside the workplace. As a result, accidents and disasters are more severe than accidents and accidents, and their effects are significant and affect the existence of the nation as well as the lives, bodies and property of the majority of people. It is defined as an accident that needs to be actively addressed at the national level because it can be mad. ~~Figure 1 summarizes the distinction between disaster and disaster accidents and life safety accidents.~~

2.2 Classification of detailed areas of disasters and safety accidents

The Life Safety Accident (LSI) is mainly composed of physical and physical injuries caused by individual behaviors for our purpose of leisure activities, but mentally deprived, such as drug addiction or intentional self-harm (suicide). Remission may include mental thinking.

Mental accidents, such as drug addiction and intentional self-harm, can be regarded as another form of

injury that does not belong to the disease and causes the human to become a disease and even cause death, especially in terms of coping. And health measures such as preventive education.

Therefore, it is necessary to set up accidents that require such health measures as health and safety accident areas, which are individual areas, and to learn separately from the life safety accident areas.

In fact, the area of health and safety accidents, which are divided into individual categories, is analyzed as an area with a larger category than the area of life safety accidents in terms of the attributes of the categories.[10]

2.3 Establishment of two sets of disasters

All disaster•accident are categorized into natural disasters caused by nature and social disasters caused by people's evil minds, mistakes or foolishness.

Natural disasters can be reclassified as geological disasters caused by internal forces such as meteorological and climate disasters caused by external forces caused by solar energy, such as typhoons and heavy rains, and dynamic crustal changes such as earthquakes. In terms of coping and responding to both meteorological and climate disasters and geological disasters, activities such as “predicting and preparing for signs of occurrence in advance, and avoiding or reducing accident damage in the event of a disaster” are called disaster prevention activities. There is no need to classify and learn.

Therefore, the natural disaster area was reclassified into the above two disasters, and the disaster and disaster accidents were divided into two categories (Natural Disaster (ND)) and social disaster. Figure 1 explained 3 steps for classification procedure.

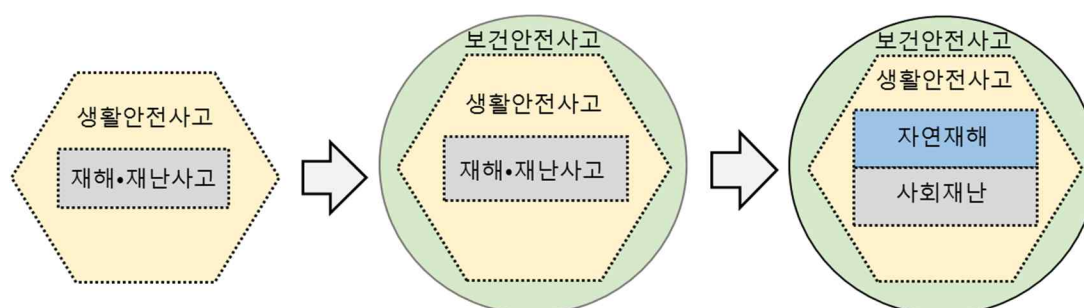


Figure 1. Classification diagram of 6 accident area(zone)

2.4 Classification and transfer of individual areas of social disaster

According to law, Article 3, paragraph 1 of the Framework Act on Disaster and Safety Management, social disasters are caused by fire, collapse, explosion, transportation accident, chemical accident, environmental pollution, etc. It is defined as a disaster that causes damage from paralysis of national infrastructure (hereinafter referred to as "national infrastructure") such as finance, medical care, and water supply, the spread of infectious or livestock infectious diseases, and fine dust disaster.

In academic terms, social disasters can be classified into three areas: deliberate disasters, accidental accidents and negligible accidents. Accidental accidents can be categorized into five sectors: fire accident sector, collapse accident sector, explosion accident sector, falls (falls) accident sector, and chemical accident sector.

Intentional disasters can be collectively set up as a single category of criminal accidents. Accidental accidents are traffic accidents that occur in vehicles, such as cars, ships, and airplanes. It can be subdivided

into six sectors: fire accident sector, collapse accident sector, explosion accident sector, fall accident sector, chemical accident sector. Finally, negligible disasters can be categorized into three areas: national infrastructure disasters such as disconnection of energy·communication·transportation·finance·medical care·water supply, infectious diseases·livestock epidemics, and environmental pollution.

The criminal accident area, the traffic accident area, and the social infrastructure system area, which are judged to be distinctive characteristics of social disaster area, were deemed appropriate to be set as individual areas. Also fire accidents and collapse accidents, which have higher characteristics in the area of social safety than those in the social disaster area, have been classified into individual sectors in the area of life safety by moving them from the area of social disaster to the area of life safe accidents.

In addition, explosion accidents, chemical accidents and fall accidents are mainly accidents that occur at industrial sites (plants, construction sites, etc.), which greatly affect national production activities. Rather than dividing into domains, they are divided into individual sectors of the national infrastructure disaster domain.

Lastly, because infectious diseases and livestock epidemic disasters are required to be indispensable in terms of their health, they are transferred to the health and safety accident area and classified into separate sectors of the health and safety area.

Table 1 summarizes the redeployment of the areas and sectors belonging to the social disaster category.

Table 1. Summary of Individual Areas in Social Infra Disasters and Transfer to Other Areas

Disc.	Div.	Area(Zone)	Sector	Classification
Social Infra Disast- ers	Deliberate disaster	<u>Crime accident</u>	Separate crime incidents into individual zone	→ Crime accident zone
		<u>Transportation Accident</u>	Separate transportation accidents into individual zone	→ Transportation accident zone
	Accidental disaster	Fire accident	Established one sector by moving to the field of life safety accident zone	※It is a social disaster but it is moved to life safety accident zone in management.
		Collapse accident	Established one sector by moving to the field of life safety accident zone	
		Explosion accident	Established one sector by moving to the field of social infrastructure disaster zone	
		Chemical accident	Established one sector by moving to the field of social infrastructure disaster zone	※It corresponds to social disaster, but not as an individual zone but as a sector of social infra disaster area
		Fall accident	Established one sector by moving to the field of social infrastructure disaster zone	
	Negligent disaster	Environmental pollution disaster	Established as one sector of social infra disaster area	
		<u>National Infra Disaster</u>	Separate social infrastructure disasters into separate zone	→ National infra disaster zone
Infectious diseases & Livestock infections		Established as one sector by moving to health and safety accident area	※It is a social disaster but moved to life safety accident zone	

As shown in Table 1, among the 10 areas that constitute social disaster, the three areas of crime accident area, transportation accident area, and social infrastructure area are separated into separate areas and the remaining seven areas are not separated into individual areas[4]. We moved to another area that was closely related and set it as a field of that area. In other words, social disasters are reclassified into three separate areas: Crime Incident (CI), Transportation Accident (TA), and Social Infra Disaster (SID). Among the disaster areas, fire accidents, collapse and collapse accidents are transferred to other areas of life safety accidents, infectious diseases and livestock infectious diseases to other areas of health and safety accidents, and explosions, chemical and chemical accidents, and falls. It is set up as a separate field of social infrastructure disaster, which is one area of social disaster. Figure 1 shows a disaster diagram divided into six accident areas.

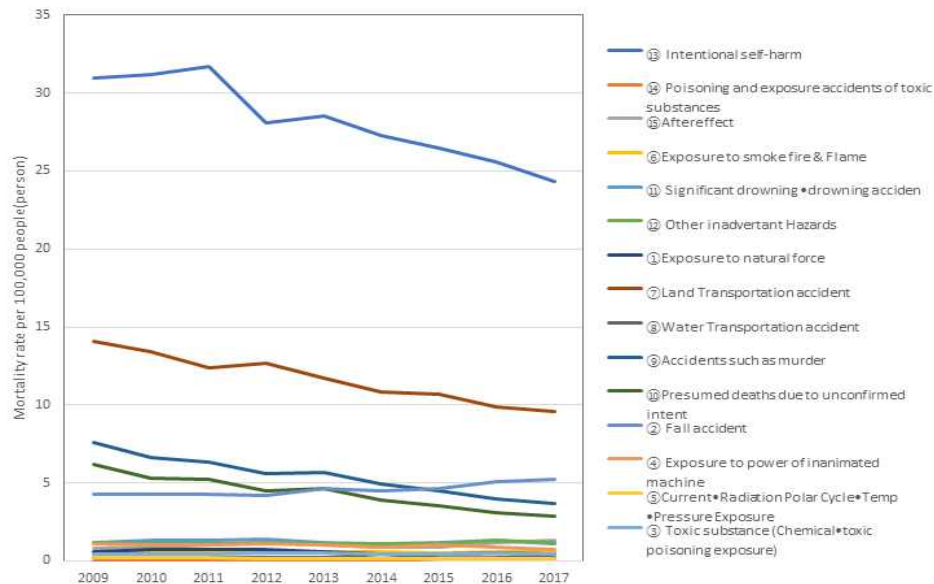
3. SECTOR CLASSIFICATION BY 6 AREAS BASED ON DEATH CAUSES' STATISTICS

3.1 Analysis of the average mortality rate of death causes' statistics(2009~2017)

Since 1983, the Korea Statistical Agency (KSO) has identified 8 external causes (abbreviated abbreviations for external factors) from human disease and mortality (Transportation accidents, falls, drowning, burns, asphyxia, poisoning, suicide, killing, etc.)[4]. The mortality rate has been announced, and since 2009, 15 external causes have been reclassified and reported as statistical figures. Figure 2 shows external causes with statistical values.

A external cause is a disease that occurs in personal health, that is, a structural and functional change in the body in terms of pathology or physiology that is defined as a medical condition. It is a disease and death caused by various disasters and accidents.

External Causes	force																
	①Exposure to natural	②Fall accident	③Poisoning & Toxic substance exposure (Chemical· toxic	④Exposure to power of inanimate machine	Cycle: Temp· Pressur Polar	⑤Current· Radiation	⑥Exposure to smoke fire & Flame	⑦Land Transportation accident	⑧Water Transportation accident	⑨Crime Accidents such as murder	⑩ Presumed deaths due to unconfirmed drowning accident	⑪Accidental⑩	Hazards	⑫Other inadvertent	⑬Intentional self-harm toxic substances	⑭Poisoning and exposure accidents of	⑮Aftereffect accident
Year																	
2009	0.6	4.3	0.4	1.1	0.2	0.5	14.1	0.2	7.6	6.2	1.2	1.2	31.0	0.0	0.8		
2010	0.7	4.3	0.4	1	0.2	0.6	13.4	0.2	6.6	5.3	1.3	1.1	31.2	0.0	0.9		
2011	0.7	4.3	0.4	1	0.2	0.5	12.4	0.2	6.3	5.2	1.3	1.1	31.7	0.0	1		
2012	0.7	4.2	0.5	1.1	0.1	0.6	12.7	0.2	5.6	4.5	1.4	1.2	28.1	0.0	1.2		
2013	0.6	4.6	0.5	1	0.1	0.6	11.7	0.2	5.7	4.6	1.2	1.1	28.5	0.1	1		
2014	0.4	4.5	0.4	0.9	0.1	0.6	10.8	0.4	4.9	3.9	1.1	1.1	27.3	0.1	0.9		
2015	0.4	4.6	0.4	1	0.1	0.5	10.7	0.2	4.5	3.5	1.2	1.1	26.5	0.1	0.9		
2016	0.5	5.1	0.5	0.9	0.1	0.6	9.9	0.2	4.0	3.1	1.3	1.3	25.6	0.03	1.2		
2017	0.4	5.2	0.4	0.7	0.1	0.6	9.6	0.2	3.7	2.9	1.1	1.2	24.3	0.4	1.3		
AVG	0.56	4.57	0.43	0.97	0.13	0.57	11.70	0.22	5.43	4.36	1.23	1.16	28.24	0.43	1.02		



a) Mortality rate by external causes per year(per 100,000 people) (b)Legend: types of external cause by KSO

Figure 2. Change in mortality rate due to external causes from 2009 to 2017 year.

These deaths include: ①exposure to natural forces, ②fall accidents, ③poisoning & toxic substance (chemical•toxic poisoning) exposure accidents, ④exposure to power of inanimate machine such as explosions, ⑤current•radiation polar cycle•temperature•pressure exposure accidents, ⑥exposure to smoke, fire, and flames, ⑦land transportation accidents, ⑧water operation accidents, ⑨crime accidents such as murder, ⑩presumed deaths due to unconfirmed intent ⑪untimely drowning accident, ⑫other inadvertent Hazards ⑬intentional self-harm untimely drowning and drowning accidents, ⑭other risks include: unintentional respiratory risk, ⑮poisoning and exposure accidents of toxic substances (drugs and biologicals), ⑯aftereffect.

3.2 Individual Sector-specific Areas of Death

3.2.1 Establishment of individual sectors in the area of H & SA

Among the external causes with the highest mortality rate, the most common cause of death was a self-intentional self-harm (suicide), with an average mortality rate of 28.24 deaths. This external cause is set up as an independent individual, a field of suicide accidents.

In addition, the mortality rate is less than one person, but the recent increase in foreign poisoning substances (drugs and biologicals) poisoning and exposure accidents are also included. It is set up as a separate field of addiction.

Aftereffects (1.02 deaths) are the external causes occurring during or after treatment, and it is highly necessary to set them as the aftereffect accidents in the area of health and safety accidents.

In addition, although the numbers are not statistically large, they are not classified as external causes, but the areas of rescue, first aid, and rescue accidents that lead to death due to environmental pollution disasters, infectious diseases, livestock infectious diseases, or various accidents are not properly performed in a timely manner. Since it is a field requiring health measures, it is necessary to set up and manage individual areas of

the health and safety disaster area.

3.2.2 Establishment of individual sectors in the area of transportation accident

The second highest rate of death among external causes was 7.6 land transport accidents with an average mortality rate of 11.70. There is a need for pedestrian accidents, bus ride accidents, subway ride accidents, car road accidents and two-wheel drive accidents.

In addition, the rate of death is very low, but the number of external causes is increasing steadily due to large accidents[8]. Water accidents are also designated as water transportation accidents, which are individual sectors in the area of transportation accidents and disasters. In addition, the mortality rate is so small that it is not statistically.

3.2.3 Establishment of individual sectors in the area of crime accidents

External causes with an average mortality of three or more were reported to have been criminals (5.43), killing, fall (4.57), and unidentified (4.36). Two outsiders, apart from accidental injuries, result from intentional or violent accidents and can be classified as criminal accidents. In this case, crimes such as perpetration (killing) are set up in the field of killing in the area of crime accident, while external causes who are unidentified intentions are considered to have a high probability of being caused by violence or sexual assault, and thus they are set up in the field of violence and sexual violence.

In addition, accidents caused by indifference or abuse of missing persons and children due to missing children can be set up as separate fields in the area of criminal accidents.

3.2.4 Establishment of individual sectors in the area of social infrastructure disaster

Among the external causes mentioned in former clause, there is a relatively high mortality rate. It is estimated. Therefore, fall accidents are categorized as important external causes arising from industrial disasters. In addition, the mortality rate is very low, but the number of people who have increased slightly in recent years is ④exposure to the power of non-living machinery. Since it is classified as an important external cause arising from industrial disasters, it is considered that it occupies a part in industrial disasters in the area of social infrastructure disasters.

Also, poisoning and exposure accidents of toxic substances (chemical and toxic substances) are classified as industrial disasters. It needs to be set up in separate areas of social infrastructure disaster area.

However, the three external causes mentioned earlier ②fall accidents, ④exposure to the power of non-living machinery and, in addition, ③poisonous substances (chemical and toxic substances) poisoning and exposure accidents, add up the figures and include them in the field of industrial disasters. It is reasonable.

In addition, energy and information disasters, terrorism, cyberterrorism disasters, and environmental, biological, and radiological accident disasters, which are closely related to social infrastructure disasters, are added to the areas of social infrastructure disasters.

3.2.5 Establishment of individual sectors in natural disaster areas

Although there is a mortality rate of less than one person, it is an external cause who repeats every year ① exposure to natural forces (0.56 deaths). This is equivalent to climate and meteorological disasters, and it is necessary to add geological disasters such as earthquakes to separate areas of natural disasters.

3.2.6 Establishment of individual fields of life safety accidents

Except for the deaths of 15 external causes who have been classified as areas, ⑥exposure to smoke, fire,

and flames (0.57), other inadvertent risks of breathing (1.16 Deaths), unexpected drowning and drowning accidents (1.23 Deaths), ⑤four external causes of current, radiation, polar circulation, temperature and pressure exposure accidents (0.13 deaths).

Among the four external causes, exposure to smoke, fire, and flames is mainly caused by fire, so it can be set as a fire accident field, which is a separate area of the safety accidents area. Of course, the fire sector was originally a domain of social disaster, but it was transferred to the area of living safety due to management efficiency.

In addition, other unexpected respiratory risk accidents are also caused by the collapse and collapse of heavy objects due to the collapse of the facility. Of course, this external cause also belongs to the accidental accident field of social disaster, but has been transferred to the area of living safety due to the management efficiency.

Unexpected drowning and drowning accidents may be included in the following, which can be set up in the field of leisure activity accidents as physical and physical injuries caused by individual activities such as water play activities. Current, Radiation, Polar Circulation, Temperature, Atmospheric Exposure Accidents can be set as home life accidents because they are mainly caused by electrical contact at home.

4. DISCURSIONS

Disaster•safety accidents were categorized into six accident areas and areas were classified into 25 areas. The natural disaster area is set up as a meteorological / climate disaster by the death of external causes due to 'exposure to the power of nature' such as strong winds, heavy rains, lightning strikes, snow and snow storms, earth and earth erosion, coastal erosion and forest fires. As a result, the area of natural disasters was doubled by adding geological natural disasters such as earthquakes, volcanoes, and tsunamis, which correspond to 'exposure to nature' but have not yet been reported.

Transportation accidents are categorized as death accidents caused by "land transport accidents" such as pedestrian accidents, bus ride accidents, subway ride accidents, car road accidents, two-wheel vehicle accidents, and 'water transport accidents'. External causes such as deaths caused by 'aviation accidents' such as deaths of external causes and boarding accidents were additionally set and divided into three areas of transportation: land transportation, maritime transportation and air transportation.

The social infrastructure sector combines all three deaths such as 'fall accident', 'exposure to the power of non-living machinery', and poisoning and exposure to toxic substances (chemical and toxic substances). Set. In addition, six separate sectors were set up in the social infrastructure disaster area by adding energy, information disconnection disasters, terrorism, cyberterrorism disasters, and environmental, biological, and radiological accident disasters.

The area of crime accident disaster was set as the field of violent and sexual violence, and the external causes who died due to "accidents such as killings" were set up as the areas of violent and sexual violence. In addition, four separate fields were set up in the criminal accident area by adding the MIA accident field and the child abuse accident field considered to be important accidents

In the area of life safety accidents, external causes who were classified as exposure to smoke, fire and flame were designated as fire accidents and those who were classified as other untimely breathing accidents as collapse and collapse accidents. In addition, the deaths of inadvertent drowning and drowning accidents were set as leisure activity accidents, and 'current, radiation, polar circulation, temperature, and air pressure exposure

accidents' were designated as household life accidents. It is set in the area of safety accident.

The area of health and safety accidents is designated as suicide accidents, which are counted as “intentional self-harm”(suicide). After that, the external causes who were counted as ‘external sequelae accidents’ were set as the sequelae accident field. In addition, six separate fields were set up in the area of health and safety accidents by adding the fields of environmental pollution, infectious diseases and livestock accidents, and rescue and rescue accidents, which are foreign deaths that cause major accidents involving health measures.

As a result, 25 individual fields set up in six areas and standardized.

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